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# AN ANNOTATED CATALOGUE OF THE CULICINE MOSQUITOES OF THE FEDERATION OF RHODESIA AND NYASALAND AND NEIGHBOURING COUNTRIES, TOGETHER WITH LOCALITY RECORDS FOR SOUTHERN RHODESIA

By H. S. Leeson

(*London School of Hygiene and Tropical Medicine*)

Manuscript received 2nd October, 1957

(Read 6th November, 1957)

With one map

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## Introduction and Acknowledgments

This paper is not intended to be a taxonomic study nor are any keys provided for identification of the mosquitoes. The object of the catalogue is to supply a starting point for a study of the Culicine mosquitoes of the Federation of Rhodesia and Nyasaland. Most of the information given here has already been published and is scattered in many journals and papers but there are still numerous gaps which need to be filled.

It has not been thought necessary to give here the full geographical distribution of the species. Only those mosquitoes are listed that have been recorded from the three countries of the Federation: Southern Rhodesia, Northern Rhodesia and Nyasaland; and species from the neighbouring Bechuanaland, Mocambique and Transvaal are included because some of them may later be discovered inside the Federation boundaries.

In addition to geographical notes, other items of interest are given after the name of the mosquito; for example, the names of its affinities or near relatives, some notes on the appearance of the adult if readily observed, the feeding habits of the females and their medical importance if known, and finally notes are given on any striking characteristics of the larva and its habitats.

The catalogue has been compiled partly from a study of material in the collections in the London School of Hygiene and Tropical Medicine and in the

British Museum (Natural History) and partly from a review of the literature published since Edwards (1941) on adults and Hopkins (1952) on larvae. The titles of the main works are given in the list of references; these should be consulted for details of taxonomy, systematics, specific identification and other matters not dealt with here.

I am indebted to Mr. P. F. Mattingly, British Museum (Natural History), for reading through the manuscript, for comments on systematic nomenclature and for permitting me to examine certain adult culicines in the National collection.

I also wish to acknowledge with thanks the help given to me by the Office of the High Commissioner for Rhodesia and Nyasaland in supplying many of the figures for approximate altitudes.

## PART I.

### Alphabetical Catalogue of Culicine Mosquitoes, with Geographical, Taxonomic and Biological Notes

The names of the mosquitoes are arranged within the genera and subgenera in alphabetical order without regard to zoological or systematic significance.

Locality records are given only for Southern Rhodesia. Those published for the first time are indicated by the date as well as by the collector's initials. These and other abbreviations are as follows:

A. C.—A. Cuthbertson.
B. M.—British Museum.
C. V. M.—C. V. Meeser.
de M.—B. de Meillon.
E. T. R.—E. T. Reid.
F. W. E.—F. W. Edwards.
G. A. K. M.—Sir Guy A. K. Marshall.
H. S. L.—H. S. Leeson.
Lav.—M. Lavoipierre.
P. B.—Pinned in box at London School of Hygiene and Tropical Medicine.
P. F. M.—P. F. Mattingly.
Theo.—F. V. Theobald.
W. E. H.—W. E. Haworth.

#### Aëdes (Aedimorphus)

*A. albocephalus* Theo., 1903

Southern Rhodesia: Bindura, Salisbury, Shamva. Nearest records are from Cape Province and Natal, mostly on or near the coast.

This species is one of the *tarsalis* group (Edwards No. 4), the females of which are similar to those of *A. tarsalis* and have been found naturally infected with the virus of Rift Valley Fever. Larvae resemble *A. lineatopennis* and *A. circumluteolus* and have been recorded from grassy pools, drains, brackish- and sea-water.

*A. alboventralis* Theo., 1910

Southern Rhodesia: Bindura, Copper Queen, Shamva. Northern Rhodesia, a female; this record requires confirmation (P. F. M., *in litt.*). Adjacent records are from Transvaal where the species is rare.

This is one of the *abnormalis* group (Edwards No. 5), and the adults are near *A. abnormalis* of the West Coast and *A. congolensis* of the Belgian Congo. Larvae resemble *A. filicis*, *A. tarsalis* and *A. dalzieli* and inhabit grassy swamps, streams, pools and marshes.

*A. argenteopunctatus* Theo., 1901

SOUTHERN RHODESIA: Salisbury, Shamva (1933, *H. S. L.*), Sinoia (bred male, 1934, *H. S. L.*). NORTHERN RHODESIA, NYASALAND, BECHUANALAND, TRANSVAAL.

This is one of seven species in Edwards' group No. 2. Adults have four silvery spots on the mesonotum and pre-apical white spots on the anterior side of the middle and hind tibiae. It is a forest species (ground level only) which bites man day and night in Uganda (Haddow and others, 1951). Larvae have a dorsally concave and ventrally convex siphon which is angled at the subventral tuft; they are found in ground pools and river pools.

FIG. 1.—Sketch map of Southern Rhodesia, showing location of places mentioned in the text.

*A. capensis* Edw., 1924

NYASALAND, TRANSVAAL.

This is one of the *apicoannulatus* group (Edwards No. 1) and the species is allied to *A. marshalli* and *A. haworthi*. There may be more than one form of the species. Females rarely bite man. Larvae are also allied to *A. haworthi* and are found in tree holes and bamboos.

*A. cumminsi* Theo., 1903

NORTHERN RHODESIA.

This is one of nine species in Edwards' No. 7 (*dentatus*) group. Adults are similar to *A. dentatus* but are larger and with unbanded abdomen. Females bite man, outside, day and night. The larva has a spiculated head capsule, and chitinous plaques on thorax and abdomen and is found in muddy pools.

*A. dalzieli* Theo., 1910

SOUTHERN RHODESIA: Salisbury. MOCAMBIQUE.

A species in the *abnormalis* group (Edwards No. 5) but the adults resemble members of the *dentatus* group. Larvae are similar to *A. alboventralis* and are found in puddles, streams and dung pits.

*A. dentatus* Theo., 1905

TRANSVAAL.

One of nine species in the *dentatus* group (Edwards No. 7). Adults are similar to *A. quasiunivittatus*. Identification should be settled by examination of male terminalia. Females bite man and animals, outside, day and night. Larvae resemble *A. hirsutus* and are found in rain pools, swampy pools and quarries.

*A. durbanensis* Theo., 1903

MOCAMBIQUE, TRANSVAAL (inland records require confirmation (Edwards, 1941)).

The adult is not always distinguishable on external characters from *A. natronius* (P. F. M. *in litt.*); it resembles *A. hirsutus*. Larvae are very like *A. arabiensis*; they inhabit fresh-water pools on the ground formed by rain, grassy depressions and other pools with vegetation; they have also been reported from crab-holes.

*A. eritreae* Lewis, 1942

TRANSVAAL (rare).

A species allied to *A. abnormalis*. Females bite readily by day. Larvae occur in rock pools (Lewis, 1943).

*A. filicis* Ing. and de M., 1927

TRANSVAAL.

This is one of the *tarsalis* group (Edwards No. 4). Adults resemble *A. punctothoracis* of the Belgian Congo and the West Coast. Females bite man, outside. Larvae are like *A. tarsalis* and *A. alboventralis* and occur in forest pools.

*A. fowleri* d'Emm. de Charm., 1908

SOUTHERN RHODESIA: Salisbury. NORTHERN RHODESIA, NYASALAND, BECHUANALAND, TRANSVAAL (rare).

The species is one of seven in the *vexans* group (Edwards No. 8). Adults resemble *A. hirsutus*. Larvae have a densely spiculated body and are found in rain pools and rock pools.

*A. haworthi* Edw., 1923

NORTHERN RHODESIA, TRANSVAAL.

This is one of the *apicoannulatus* group (Edwards No. 1). Females bite man, outside. Larvae are found in tree holes and bamboos.

*A. hirsutus* Theo., 1901

SOUTHERN RHODESIA: Bindura (xii.1925, *W. E. H.*), Gatooma (xii.1928, *H. S. L.*), Que Que (i.1927, *H. S. L.*), Salisbury, Shamva. NORTHERN RHODESIA, NYASALAND, BECHUANALAND, MOCAMBIQUE, TRANSVAAL.

This species belongs to the *vexans* group (Edwards No. 8). Adults resemble *A. fowleri* and females bite man and animals, outside at night and in the daytime. Larvae are recorded from muddy rain pools, river pools and artificial containers.

*A. lamborni* Edw., 1923

NORTHERN RHODESIA, NYASALAND, TRANSVAAL.

One of two species (*boneti* the other) in the *lamborni* group (Edwards No 6). Females bite man day and night. Larvae occur in muddy pools, drains and rock pools.

*A. leesoni* Edw., 1932

SOUTHERN RHODESIA: Shamva. BECHUANALAND, MOCAMBIQUE, TRANSVAAL.

Adults are similar to *A. alboventralis*. Larvae occur in rain pools.

*A. leptolabis* Edw., 1936

NORTHERN RHODESIA.

Adults resemble *A. domesticus* of the Belgian Congo and Uganda. Larvae, which have been recorded from forest pools, show small but distinct differences from those described for *A. domesticus* (van Someren, 1956).

*A. marshalli* Theo., 1901

SOUTHERN RHODESIA: Salisbury. NORTHERN RHODESIA, BECHUANALAND, TRANSVAAL.

A member of the *apicoannulatus* group (Edwards No. 1). Females bite man outside. Larvae have a superficial resemblance to *Stegomyia* and are found in tree-holes and bamboos.

*A. microstictus* Edw., 1936

TRANSVAAL (rare).

One of the *argenteopunctatus* group (Edwards No. 2). Adults resemble *A. mixtus*. Larvae are unknown (Hopkins, 1952) but are likely to occur in ground pools and swamps.

*A. minutus* Theo., 1901

SOUTHERN RHODESIA: Salisbury. NYASALAND, TRANSVAAL.

This species was placed in the *tarsalis* group (Edwards No. 4) and the adult closely resembles *A. tarsalis*, but it would appear from the larva that it should be included in the *argenteopunctatus* group. The larva ascribed by Hopkins

(1952) to *A. minutus* is really *A. vittatus*. The true larva of *A. minutus* is quite different and has been found in South Africa by Muspratt (Mattingly and Knight, 1956). For description of larva *see* Muspratt 1956*b*. Larva is recorded from rock pools and plant axils.

*A. mixtus* Edw., 1936

SOUTHERN RHODESIA: Salisbury. TRANSVAAL.

This is one of the *argenteopunctatus* group (Edwards No. 2). Adults resemble *A. punctothoracis* and the females bite man, outside. Larvae are similar to *A. argenteopunctatus* (Muspratt, 1955) and occur in swampy pools.

*A. ochraceus* Theo., 1901

SOUTHERN RHODESIA: Salisbury. MOCAMBIQUE, TRANSVAAL.

The species is the only member of Edwards' group No. 9. Adults are distinct, with leg ornamentation like that of *Culex theileri*. Females bite man in the daytime, outside. Larvae, which might be mistaken for a *Culex*, occur in grassy rain pools.

*A. quasiunivittatus* Theo., 1901

SOUTHERN RHODESIA: Copper Queen, Salisbury. NYASALAND, MOCAMBIQUE, TRANSVAAL.

This is one of the nine species in the *dentatus* group (Edwards No. 7). Adults have a banded abdomen but no other conspicuous ornamentation. Females bite man outside. Larvae occur in muddy rain pools.

*A. tarsalis* Newst., 1907

NORTHERN RHODESIA.

The *tarsalis* group consists of six species which are not easy to separate. Females of *A. tarsalis* are similar to *A. albocephalus*; they bite by day and night. The species is recorded as a vector of Rift Valley Fever. Larvae are inseparable from *A. filicis* and are found in rock pools, forest pools and plant axils.

*A. vexans* Meigen, 1830

TRANSVAAL (Muspratt, 1955).

The *vexans* group of Edwards (No. 8) consists of seven species. This is a palaearctic species, which is not listed as Ethiopian. This discovery by Muspratt may represent a subspecies of *vexans* or even a separate species. Females are recorded as biting man and animals outside. In other countries, eggs of *A. vexans* are laid in moist leafy sites in depressions in the soil exposed by receding water. Larvae are found in flooded shallows in grassland.

**Aëdes (Diceromyia)**

*A. adersi* Edw., 1917

TRANSVAAL.

Adults resemble *A. furcifer*. This species is a suspected vector of yellow fever. Larvae occur in tree-holes, plant axils and artificial containers.

*A. fascipalpis* Edw., 1912

SOUTHERN RHODESIA: Shamva. NORTHERN RHODESIA, NYASALAND, BECHUANALAND, TRANSVAAL.

Adult resembles a *Finlaya*. Larvae occur in tree-holes.

*A. furcifer* Edw., 1913

TRANSVAAL.

Females resemble *A. taylori*. They are stout, small and have heavily scaled wings suggestive of a *Mansonioides* with a banded proboscis and speckled abdomen. They bite man at night and may be suspected of transmitting yellow fever. Larvae are like *A. taylori* and are found in tree-holes.

*A. taylori* Edw., 1936

NORTHERN RHODESIA.

Adults are closely related to *A. furcifer*. The species is a suspected vector of yellow fever. Larvae are indistinguishable from *A. furcifer* and are found in tree-holes.

*A. zethus* de M., 1943 (named by de Meillon *niveus* but changed by de M. and Lav., 1944, to *zethus*)

NORTHERN RHODESIA.

Adults are related to *A. fascipalpis* and larvae are similar to those of that species; they occur in tree-holes.

**Aëdes (Finlaya)**

*A. barnardi* Edw., 1924

TRANSVAAL.

Adults bite man, outside. Larvae occur in tree-holes.

*A. fulgens* Edw., 1917

SOUTHERN RHODESIA: Bindura (1 female, i.1926, *W. E. H.*), Ndanga (iii.1948, *C. V. M.*). NORTHERN RHODESIA, NYASALAND, BECHUANALAND, TRANSVAAL.

Adults are similar to *A. longipalpis*. Females bite man outside in bush country. Larvae are like *A. longipalpis* but the two are not found together. This species occurs in tree-holes, bamboos and rock-holes with leaves.

*A. ingrami* Edw., 1930

NORTHERN RHODESIA (as *wellmani*, Robinson, 1948). NYASALAND.

For discussion of systematic problem *see* van Someren, 1947, and Mattingly and Lips, 1953. Females of this species bite man and monkeys outside day and night. Larvae are similar to those of *A. furcifer* and are found in tree-holes.

*A. longipalpis* Grunb., 1905

NORTHERN RHODESIA.

This species has been recorded as feeding on monkeys. Larvae inhabit tree-holes and bamboo stumps.

*A. luteostriatus* Rob., 1950

NORTHERN RHODESIA.

The type locality is Ndola, where specimens were reared from larvae found in tree-holes, 1947–48 (Robinson, 1950).

*A. nyasae* Edw., 1930

NYASALAND, TRANSVAAL.

The male terminalia and palps resemble *A. ingrami*. Females bite man, outside. Larvae, which inhabit tree-holes, were described by Muspratt (1953*b*).

*A. wellmani* Theo., 1905

NORTHERN RHODESIA.

This record needs confirmation ; the species is possibly restricted to Angola and the western Katanga (*see* under *A. ingrami*). The two forms may be no more than subspecies (Mattingly and Lips, 1953). Adults have creamy-white scales on anterior half of mesonotum. Larvae are also like *A. ingrami* and are found in tree-holes (Robinson, 1948).

**Aëdes (Mucidus)**

*A. mucidus* Karsch, 1887

NORTHERN RHODESIA, MOCAMBIQUE.

In the adults of this subgenus the cross-vein 4–5 is just beyond 3–4 and is clouded. Larvae are predatory and live in ground pools where they eat other mosquito larvae.

*A. nigerrimus* Theo., 1913

MOCAMBIQUE.

Females bite by day and night in forest. Larvae occur in ground pools.

*A. scatophagoides* Theo., 1901

SOUTHERN RHODESIA : Bulawayo (ii.1946, *C. V. M.*), Salisbury. NORTHERN RHODESIA, NYASALAND, MOCAMBIQUE, TRANSVAAL.

Larvae are found in ground pools and are predaceous on other aquatic insect larvae especially those of *Aëdes* (*Neomelaniconion*).

**Aëdes (Neomelaniconion)**

The name *Banksinella* is no longer valid for this subgenus (Stone, 1956).

*A. albothorax* Theo., 1907 (syn. *pallida*)

NYASALAND, TRANSVAAL.

In the adult the pale scales on the head and mesonotum are grey and not yellow. Larvae are unknown (Hopkins, 1952) but probably occur in pools.

*A. circumluteolus* Theo., 1908

SOUTHERN RHODESIA : Salisbury (1933, *H. S. L.*). NYASALAND, BECHUANALAND, TRANSVAAL.

Adults occur in forest and plantations. Females bite men and animals, outside in the daytime. Larvae resemble *A. albocephalus*. They are indistin-

guishable from *A. lineatopennis* and *A. luteolateralis*. The above record from Salisbury is of a larva and therefore may be of one of the other similar species. Larvae occur in marshy ground and grassy pools.

*A. crassiforceps* Edw., 1927

NORTHERN RHODESIA (a doubtful record, P. F. M. *in litt.*).

*A. lineatopennis* Ludlow, 1905

SOUTHERN RHODESIA: Salisbury. NORTHERN RHODESIA, BECHUANALAND, TRANSVAAL.

Adults bite man and animals, night and day. Larvae (see *A. circumluteolus*).

*A. luteolateralis* Theo., 1901

SOUTHERN RHODESIA: Salisbury.

(See *A. circumluteolus*.)

### Aëdes (Ochlerotatus)

*A. caballus* Theo., 1912

SOUTHERN RHODESIA: Salisbury, Shamva. TRANSVAAL.

A rather small species, female with creamy abdomen. Bites man and animals, day and night. A vector of Rift Valley Fever. Larvae resemble *A. caspius* and are found in ground pools and furrows.

### Aëdes (Stegomyia)

*A. aegypti* L., 1762

This name is strictly invalid, but steps are being taken to validate it (Mattingly, 1957*b*).

SOUTHERN RHODESIA: Bikita (*C. V. M.*), Birchenough Bridge (*C. V. M.*), Darwin, Salisbury, Shamva, Umtali, Victoria Falls (iii.1949, *C. V. M.*). NORTHERN RHODESIA, NYASALAND, BECHUANALAND, MOCAMBIQUE, TRANSVAAL.

Adults of this species are well known by the mesonotal ornamentation of silvery scales forming the familiar " lyre shaped pattern ". This, in conjunction with other characters, identifies the " yellow fever mosquito ". Females bite man inside and outside dwellings in the evenings mainly at ground level. Besides yellow fever the species also transmits dengue. Larvae occur in artificial containers and in tree holes. For a discussion on three forms of this mosquito *see* Mattingly, 1957*b*.

*A. africanus* Theo., 1901

NORTHERN RHODESIA (NYASALAND, MOCAMBIQUE—these two records cannot be confirmed or disproved (Mattingly, 1952)).

This sylvan species is very closely allied to *A. luteocephalus* but the pale basal marking on the hind femur is less extensive in *A. africanus*. Females bite man and monkeys after sunset in the open. The species lives mostly in forest canopy and is the principal vector of endemic forest yellow fever in Africa. Larvae are similar to *A. luteocephalus* and occur in tree-holes and artificial containers.

*A. amaltheus* de M. and Lav., 1944

Southern Rhodesia: Some records are regarded as doubtful (Mattingly, 1953). Northern Rhodesia, Bechuanaland.

Adult resembles *A. masseyi*. Females bite man outside but any disease transmission is unknown. Larvae resemble *A. unilineatus* and are found in tree-holes.

*A. calceatus* Edw., 1924

Southern Rhodesia: Bindura, Darwin, Shamva. Some other records are regarded as doubtful or provisional (Mattingly, 1953). Northern Rhodesia, Bechuanaland.

This species needs more study; it and *A. soleatus* have been confused with *A. poweri*. Females bite man outside but disease transmission is unknown. Larvae are like those of *A. dendrophilus*; the siphon is all dark and they are found in tree-holes and artificial containers.

*A. chaussieri* Edw., 1923

Northern Rhodesia.

This species is known only from the female, which resembles *A. simpsoni* and bites man at dusk. Larva is unknown (Hopkins, 1952) but probably occurs in rot-holes in trees.

*A. contiguus* Edw., 1930

Southern Rhodesia: Salisbury. Some other records are doubtful (Mattingly, 1953); see *A.* (*Steg.*) *langata*. Transvaal.

Adult resembles *A. langata* and *A. calceatus*. Females bite man outside. Larva is like that of *A. metallicus* and is found in tree-holes and plant axils.

*A. dendrophilus* Edw., 1921 (syn. *deboeri* ssp. *demeilloni*)

Northern Rhodesia.

This is a forest species which exhibits sexual dimorphism. Females bite man and animals, outside, day and night, mainly at ground level but may do so up to 50 feet. The species transmits Rift valley fever. Larvae are found in tree-holes from ground level up to 60 feet, in plant axils, in rock-holes and bamboo stumps.

*A. heischi* van Som., 1951

Transvaal.

Females bite man outside and larvae occur in tree-holes.

*A. langata* van Som., 1946

Southern Rhodesia: This species is recorded as far south as the Ndanga area, where it overlaps with *A. contiguus* which continues southwards into Transvaal and is replaced there by *A. poweri* (Mattingly, 1954). Northern Rhodesia, Transvaal.

Adults resemble *A. contiguus*. Larvae are similar to *A. apicoargenteus* and *A. soleatus*; they are found in tree-holes (van Someren, 1946*a*).

*A. luteocephalus* Newst., 1907

Southern Rhodesia : Victoria Falls. Northern Rhodesia, Nyasaland, Bechuanaland.

The species resembles *A. africanus* but the pale basal marking on the hind femur is more extensive in *A. luteocephalus*. Females bite man outside in the evenings and are said not to enter closed forest. The species may be implicated in the transmission of yellow fever. Larvae are like *A. africanus* and live in tree-holes, rock-holes and bamboo.

*A. masseyi* Edw., 1923

Northern Rhodesia.

Only the female is known. It is similar to *A. chaussieri* and *A. poweri*. It is likely that larvae will be found in rot-holes in trees.

*A. metallicus* Edw., 1912

Southern Rhodesia : Bindura, Fort Victoria, Gatooma, Odzi, Salisbury, Shamva. Northern Rhodesia, Bechuanaland, Mocambique, Transvaal.

Females bite man and animals, outside, in the evenings, mainly at ground level. The species may be implicated in the transmission of yellow fever. In the larva the pleural spines are more developed than in any other larva of *Aëdes*. Larvae occur in tree-holes up to 50 feet, in rock-holes, coconut shells and artificial containers.

*A. poweri* Theo., 1905

Southern Rhodesia : Some records are unreliable (Mattingly, 1953). See *A. langata*. Transvaal.

The adult is known only from the female. It is similar to *A. contiguus*, *A. masseyi* and *A. chaussieri*. It bites man outside in forest. Disease transmission is unknown. Larva is indistinguishable from *A. contiguus* and probably inhabits tree-holes or plant axils.

*A. pseudonigeria* Theo., 1910

Bechuanaland.

Adult resembles *A. poweri*. Females bite man outside. The identity of the larva is uncertain ; it probably occurs in tree-holes and plant axils.

*A. schwetzi* Edw., 1926

Northern Rhodesia.

Adult is near *A. apicoargenteus*. Larva closely resembles *A. calceatus* and occurs in tree-holes and artificial containers.

*A. simpsoni* Theo., 1905

Southern Rhodesia : Bulawayo, Ndanga, Salisbury, Shamva, Sinoia, Umtali, Victoria Falls. Northern Rhodesia, Nyasaland, Bechuanaland, Mocambique, Transvaal.

This is a variable rural or plantation species which bites man, monkeys, goats and fowl outside in the daytime, mainly at ground level. It is an important

vector of yellow fever. Larvae resemble those of *A. aegypti* and are found in plant axils and artificial containers.

*A. soleatus* Edw., 1924

Southern Rhodesia: Bindura, Darwin, Shamva. Some other records are doubtful or provisional (Mattingly, 1953). Nyasaland.

See *A. calceatus*. Females bite man in forest. Larvae are similar to *A. langata* and are found in tree-holes, bamboos and artificial containers.

*A. subargenteus* Edw., 1925

Nyasaland.

Adult resembles *A. aegypti*. Females bite man, outside in woodland and forest, morning and afternoon. Larva has a pale head and siphon and is found in tree-holes.

*A. unilineatus* Theo., 1906

Southern Rhodesia: Fort Victoria. Northern Rhodesia, Nyasaland, Bechuanaland, Transvaal.

This is a savanna mosquito which does not enter forest. It has a white stripe but no sublateral white patches on the anterior half of the mesonotum. No other known African mosquito has this marking. Females bite man rarely in the daytime out-of-doors. The larva is distinctive, having the barred area of the ventral brush absent or poorly developed. It is likely to be found in tree-holes.

*A. vittatus* Big., 1861

Southern Rhodesia: Bindura, Chibi, Concession (xii.1928, *H. S. L.*), Dombashawa (ii.1945, *C. V. M.*), Epworth, Fort Victoria, Gatooma, Goromonzi, Gwelo. Maranka reserve, Matopo Hills, Msonneddi, Mt. Darwin, Ndanga, Salisbury, Shamva, Triangle estate, Umtali, Victoria Falls, Zaka. Northern Rhodesia, Nyasaland, Bechuanaland, Mocambique, Transvaal.

This is not a typical *Stegomyia* but resembles *Aedimorphus*. It is a widely distributed species resistant to low temperatures. Adults have six silvery spots on the mesonotum and distinct leg markings. Females bite man outside in the daytime and evening. It is possibly a transmitter of yellow fever. Larvae are commonly found in rock pools and in artificial containers, the water in which is sometimes very warm.

*A. woodi* Edw., 1922

Nyasaland, Mocambique.

The female is similar to *A. subargenteus* but has a double median line of yellow scales posteriorly on the scutum near the dark scaled lateral lobes of the scutellum. It bites man outside. The larva is like *A. simpsoni* and *A. subargenteus* and occurs in rot-holes of trees (van Someren and Harper, 1955).

**Aedomyia**

*A. africana* Nev.–Lem., 1906

Nyasaland, Mocambique.

Adults are small and heavily scaled with speckled and banded legs and wings. Females bite at night. Larvae occur in pools with *Pistia* plants.

*A. furfurea* Enderlein, 1923

Southern Rhodesia : Fort Victoria, Ndanga (xi.1948, *C. V. M.*), Salisbury (i.1945, *C. V. M.*). Northern Rhodesia, Bechuanaland.

Adults are like *Aedomyia africana* but have wings with an additional white spot beyond the middle of the third vein. Larvae possess stellate setae ; they are found in borrow pits with vegetation.

**Culex (Culex)**

*C. antennatus* Becker, 1903.

Northern Rhodesia, Bechuanaland, Mocambique.

A small species with no special ornamentation. Females bite man by day, outside and indoors. Larvae are like *C. decens* and *C. univittatus*; they occur in swamps, drains and borrow pits.

*C. annulioris* Theo., 1901

Southern Rhodesia : Bindura, Concession, Gatooma (viii.1927, *H. S. L.*), Inyagui, Penhalonga, Rusape, Salisbury, Shamva, Sinoia, Umtali. Northern Rhodesia, Nyasaland, Mocambique, Transvaal.

Adult resembles *C. aurantapex* and *C. bitaeniorhynchus*. Females bite man, day and night. Larvae indistinguishable from *C. bitaeniorhynchus*, *C. ethiopicus* and *C. aurantapex* ; they are found in clear water in ground pools with algae in drains and in river pools.

*C. argenteopunctatus kingi* Theo., 1913

Southern Rhodesia : Salisbury. Northern Rhodesia, Nyasaland, Bechuanaland.

Adults are small and dark with four silvery spots on the mesonotum resembling *Aedes argenteopunctatus* but are related to *C. simpsoni*. The subspecies *kingi* is the mainland representative—the type form being found in Madagascar. Females bite man, day and night. Larvae are recognised by the long siphon which has spines at the end ; they are found in ground pools.

*C. aurantapex* Edw., 1914

Transvaal.

See *C. annulioris*. Larvae have been obtained in swamp pools with high organic content.

*C. aurantapex jinjaensis* Edw., 1941

Northern Rhodesia.

Adult is darker than typical form.

*C. bitaeniorhynchus* Giles, 1901

Southern Rhodesia : Inyagui, Salisbury, Shamva. Mocambique.

The form found in Africa is regarded as atypical ; in the Orient it is a variable species (see *C. ethiopicus*). Female bites man and animals, in daytime and at dusk. It is essentially an outdoor species. Larvae are similar to those of *C. aurantapex* and indistinguishable from *C. ethiopicus ;* they are found in ground pools with algae.

*C. decens* Theo., 1901

Southern Rhodesia: Dombashawa, Gatooma (viii.1927, *H. S. L.*), Mazoe, Salisbury. Northern Rhodesia, Mocambique, Transvaal.

A small species with a wide distribution in Africa. There may be more than one form of this species or even more than one species may be involved. The larva is similar to *C. antennatus* and *C. univittatus* and is inseparable from *C. invidiosus*; it is found in swamps, borrow pits, river pools and has been rarely recorded from tree-holes and artificial containers.

*C. duttoni* Theo., 1901

Southern Rhodesia: Bindura, Chipinga (iv.1946, *C. V. M.*), Concession, Fungwi reserve, Gatooma (viii.1927, *H. S. L.*), Marandellas, Que Que, Salisbury, Shamva, Sinoia, Old Umtali (x.1926, *H. S. L.*), Umtali (v.1927, *H. S. L.*), Umvuma (ix.1942, *C. V. M.*). Northern Rhodesia, Nyasaland, Bechuanaland, Mocambique, Transvaal.

This is one of the commonest species of *Culex* in Africa. The proboscis and tarsi are pale ringed. The larva has a swollen siphon with a dark band towards the apex; it has been recorded from borrow pits, hoof prints, ditches, tanks and ground pools.

*C. ethiopicus* Edw., 1912

Southern Rhodesia: Bindura, Bombas (vii.1928, *H. S. L.*), Concession (x.1928, *H. S. L.*), Inyagui, Marandellas (ii.1927, *H. S. L.*), Salisbury, Shamva (xi.1926, *H. S. L.*). Northern Rhodesia, Bechuanaland, Mocambique, Transvaal.

This species is regarded as distinct from *C. bitaeniorhynchus* because of the male genitalia. Larvae have been obtained from a stream and from riverside puddles.

*C. fatigans* Wied., 1828

Southern Rhodesia: Bindura (xii.1925, *W. E. H.*), Salisbury (xi.1925, *W. E. H.*), Shamva (xii.1933, *H. S. L.*), Sinoia (viii.1927, *H. S. L.*). Northern Rhodesia, Nyasaland, Bechuanaland, Mocambique, Transvaal.

*C. fatigans* is the common domestic *Culex* throughout tropical Africa except in arid areas. It is regarded as a subspecies of *C. pipiens* (Mattingly, 1957*a*). Females seem to feed on any available host, including man, indoors and outside in evenings and at night. The species has been shown experimentally to be capable of transmitting yellow fever in the laboratory. Larval habitats are very varied; foul water is commonly infested, some shade being necessary; examples are, cesspits, septic tanks, sewage effluents and water in utensils.

*C. guiarti* Blanch., 1905

Mocambique.

A dark species with no special ornamentation. Larvae are found in borrow pits, in clear water with algae and in pools with other vegetation.

*C. perfidiosus* Edw., 1914

Northern Rhodesia.

Adults resemble *C. perfuscus* and some other species. Identification of the larvae must be done with care; they resemble *C. fatigans* but are found in forest pools.

*C. perfuscus* Edw., 1914

NYASALAND, MOCAMBIQUE.

Adult belongs to a group of similar species: *C. perfidiosus*, *C. trifoliatus* and *C. invidiosus*. The larva resembles *C. decens*, *C. univittatus*, *C. antennatus* and *C. telesilla*; it occurs in forest pools and streams.

*C. pipiens* L., 1758

SOUTHERN RHODESIA: Bindura (iii.1927, *H. S. L.*), Fort Victoria (ii.1946, *C. V. M.*), Penhalonga (x.1926, *H. S. L.*), Salisbury (x.1926, *H. S. L.*), Sinoia (iv.1927, *H. S. L.*). NORTHERN RHODESIA, TRANSVAAL.

Adult has no striking distinguishing features. The whole *Culex pipiens* complex is the subject of considerable interest, at times of difficulty and occasionally of confusion (Mattingly, 1957*a*); other members are *C. fatigans* and *C. molestus*. *C. pipiens pipiens* occurs in East and South Africa. The females are usually regarded as feeding on birds but they have also been recorded as attacking man both inside and outside dwellings. Larvae are similar to those of *C. fatigans*. The range of recorded breeding places is immense and larvae have been found in natural and artificial water collections.

*C. poicilipes* Theo., 1903

SOUTHERN RHODESIA: Salisbury. NORTHERN RHODESIA, BECHUANALAND, MOCAMBIQUE, TRANSVAAL.

A common species except in forests. Adults are very distinct; they have pale spots on the legs and a pale median ring on the proboscis. Females bite man by day and night indoors and outside and are suspected of harbouring the virus of yellow fever. The siphon of the larva is bent upwards; it is found in ground pools with vegetation and in borrow pits, usually exposed to sunlight.

*C. simpsoni* Theo., 1905

SOUTHERN RHODESIA: Bindura (i.1926, *W. E. H*), Concession (xi.1928, *H. S. L.*), Filabusi, Fungwi reserve (vii.1928, *H. S. L.*), Gatooma (xi.1928, *H. S. L.*), Inyagui (1928, *H. S. L.*), Salisbury, Shamva, Sinoia, Umtali. NORTHERN RHODESIA, BECHUANALAND, MOCAMBIQUE, TRANSVAAL.

A rather small species resembling *C. univittatus* but without the pale stripe on the hind tibiae. A house frequenter. Identification of larvae must be done with care; there may be two forms (*see* Mattingly and Brown, 1955; and Mattingly and Knight, 1956). Larvae occur in ground pools, backwaters of rivers, river pools and in streams.

*C. striatipes* Edw., 1941

SOUTHERN RHODESIA: Gatooma (xii.1928, *H. S. L.*), Marandellas (i.1927, *H. S. L.*), Shamva (1933, *H. S. L.*). TRANSVAAL (ssp. *joanae* Muspratt, 1955).

Adult resembles *C. simpsoni* but is larger and has the middle legs striped. The larva has a long siphon and long anal papillae; it occurs in river pools.

*C. telesilla* de M. and Lav., 1944

MOCAMBIQUE.

Breeding places not recorded.

*C. terzii* Edw., 1941

Southern Rhodesia: Bindura, Salisbury. Transvaal.

Adults are like *C. vansomereni* but have unbanded venter. Larvae are extremely like those of *C. vansomereni* but differ in the form of the comb teeth; they occur in pools and in artificial containers.

*C. theileri* Theo., 1903

Southern Rhodesia: Salisbury, Shamva (iii.1927, *H. S. L.*), Umtali (vii.1927, *H. S. L.*). Northern Rhodesia, Bechuanaland, Transvaal.

This species is quite distinct, having striped femora and tibiae. It is suspected as a vector of the virus of Rift Valley Fever. Larvae have curved pecten spines and are found in the backwaters of rivers, in river pools and in ditches.

*C. toroensis* Edw. and Gib., 1939

Transvaal.

Adults resemble *C. vansomereni*. Larvae are variable but usually have dorsal and ventral spines on the siphon; they are found in rock-holes, marshy pools and ditches.

*C. trifilatus* Edw., 1914

Southern Rhodesia: Beatrice (1928, *H. S. L.*), Chipinga (iv.1946, *C. V. M.*), Salisbury (Cleveland Dam, xii.1926, *H. S. L.*), Shamva, Sinoia (xi.1942, *C. V. M.*). Northern Rhodesia, Nyasaland, Transvaal.

The female proboscis is black. Man is attacked day and night. Larvae have a short siphon with the pecten along the basal two-fifths and the distal pecten spines long; they have been recorded from pools on the ground, rock pools, drains and rarely from tree-holes.

*C. univittatus* Theo., 1901

Southern Rhodesia: Bindura, Concession, Gatooma, Marandellas, Penhalonga, Salisbury, Shamva, Sinoia, Umtali. Northern Rhodesia, Nyasaland, Bechuanaland, Mocambique, Transvaal.

A common species in Africa except in forest. Adults possess a pale stripe on the anterior surface of the hind tibiae. Females bite man, outside. This mosquito is one of the proved vectors of West Nile virus in Egypt. Larva resembles *C. decens* and *C. antennatus*. The breeding places are extremely varied; records include brick pits, hoof prints, stagnant pools, bogs.

*C. vansomereni* Edw., 1926

Southern Rhodesia: Cleveland Dam, Epworth (i.1927, *H. S. L.*), Gatooma (xii.1928, *H. S. L.*), Salisbury, Sinoia (1934, *H. S. L.*). Nearest records are from Cape Province and Natal (ssp. *draconis* Muspratt, 1955).

Identification needs great care as there is considerable possibility of confusion. *See* under *C. terzii*. Adults resemble *C. trifilatus* and *C. andersoni*. The larva has a coronet of spines near the apex of the siphon (so has *C. chorleyi*). The breeding places are backwaters of rivers, ground pools and artificial containers.

*C. zombaensis* Theo., 1901

Northern Rhodesia, Nyasaland, Mocambique.

The species is a member of the *C. pipiens* group. For identification of the larva see amendment to Hopkins' key (Mattingly and Brown, 1955). Larvae occur in river pools.

### Culex (Culiciomyia)

*C. cinereus* Theo., 1901

Southern Rhodesia : Copper Queen, Salisbury, Shamva, Sinoia. Northern Rhodesia, Transvaal.

Adults are larger than *C. nebulosus*. Larvae are like those of *C. nebulosus* but the antennae are without spicules ; they have been obtained from tree-holes and old tyres.

*C. nebulosus* Theo., 1901

Southern Rhodesia : Bindura (i.1926, *W. E. H.*), Chindamora reserve (ii.1945, *C. V. M.*), Chipinga (i.1946, *C. V. M.*), Concession, Copper Queen, Fort Victoria (ii.1946, *C. V. M.*), Salisbury, Shamva, Sinoia. Northern Rhodesia, Bechuanaland, Transvaal.

Adults are of medium size possessing a narrow rim of pale scales around the eyes. Larvae have been found in various sites, *e.g.* tree holes, barrels, tanks, leaf axils, other containers.

*C. nebulosus* var. *pseudocinereus* Theo., 1901

Southern Rhodesia : Salisbury. Nyasaland, Bechuanaland, Transvaal.

Adults resemble *C. nebulosus*. Larvae are found in tree-holes, leaf axils, tins and other artificial containers.

### Culex (Lutzia)

*C. tigripes* Grandpré and Charmoy, 1900

Southern Rhodesia : Bindura, Concession (iii.1928, *H. S. L.*), Gatooma, Penhalonga (x.1926, *H. S. L.*), Salisbury, Shamva, Sinoia, Umtali. Northern Rhodesia, Nyasaland, Bechuanaland, Mocambique, Transvaal.

Adults are large mosquitoes with markings on femora and tibiae like *C. poicilipes* and *Theobaldia longiareolata*. The species is unknown outside Africa. Females bite animals day and night. The larva has mouth brushes modified for predacity and a short siphon ; it lies almost horizontally at the water surface and is found in many kinds of stagnant waters, river pools, rock pools and artificial containers.

### Culex (Mochthogenes)

*C. inconspicuosus* Theo., 1908

Southern Rhodesia : Bindura (xi.1926, *H. S. L.*), Salisbury, Shamva, Sinoia, Umtali (v.1927, *H. S. L.*). Northern Rhodesia, Mocambique, Transvaal.

Adults are small and dark with no conspicuous ornamentation. Larvae have long subventral tufts on the siphon ; they are found in a number of places, *e.g.* stagnant water, ditches, rock pools.

**Culex (Neoculex)**

*C. avianus* de M., 1943

TRANSVAAL.

Larvae resemble those of *C. salisburiensis* and occur in rock pools.

*C. horridus* Edw., 1922

SOUTHERN RHODESIA : Concession (xii.1928, *H. S. L.*), Hunyani, Shamva. NORTHERN RHODESIA.

Adults have little ornamentation. They have white scales around the eye margins ; the male palpi are about three-quarters the length of the proboscis. Females bite day and night. Larva has a long, dark straight siphon and occurs in tree-holes, plant axils and artificial containers.

*C. insignis* Carter, 1911

NYASALAND, MOCAMBIQUE.

The species is one of eight in the *rima* group ; the adults are like *C. rima* but larger. Larvae occur in foul water in shady pools, river pools and rock-holes. Some of these records may actually refer to *C. rima*. Mrs. van Someren (1956) describes the characters by which this larva may be distinguished from that of *C. sunyaniensis* which is a mainly West African species, though it has also been recorded from Sudan.

*C. pulchrithorax* Edw., 1914

MOCAMBIQUE, TRANSVAAL.

Adult has five white lines on a dark thorax. Larva is unknown (Hopkins, 1952) but probably occurs in ground pools.

*C. rubinotus* Theo., 1906

NORTHERN RHODESIA.

Larvae occur in foul water in swamps, pools and pits with *Pistia*.

*C. salisburiensis* Theo., 1901

SOUTHERN RHODESIA : Concession, Salisbury, Shamva, Sinoia, Umvuma (ix.1942, *C. V. M.*). NORTHERN RHODESIA, TRANSVAAL.

Adult has no striking ornamentation. Larvae are found in pools and edges of slow moving streams.

**Eretmapodites**

*E. chrysogaster* Graham, 1909

NORTHERN RHODESIA.

This is one of five closely related species. It lives in forest and in plantations, where the females bite animals and man by day. It is suspected as a vector of yellow fever. The larva, which is predatory on other mosquito larvae and on other aquatic larvae, is indistinguishable from four other species and occurs in fallen leaves in ground pools, and in tree-holes and plant axils.

*E. quinquevittatus* Theo., 1901

SOUTHERN RHODESIA : Salisbury. MOCAMBIQUE, TRANSVAAL.

Adult has five stripes of black scales on the yellow mesonotum. Females

bite man outside in the daytime. The larva has tuft B of abdominal segment VIII arising from a conspicuous tubercle ; this tuft is stout and split into three branches. Larvae occur in plant axils, snail shells and artificial containers.

*E. subsimplicipes* Edw., 1914

NYASALAND, TRANSVAAL (the only species in the *chrysogaster* group in South Africa (Muspratt, 1955)).

Adult similar to *E. chrysogaster*. Females bite man outside in the daytime. It is a vector of Rift Valley Fever and a laboratory vector of yellow fever. Larvae are found in water in fallen leaves and in artificial containers.

**Ficalbia (Etorleptiomyia)**

*F. mediolineata* Theo., 1904

NORTHERN RHODESIA, NYASALAND, BECHUANALAND, TRANSVAAL.

Adults are small mosquitoes with a narrow pale median line on the thorax. Larvae are found in borrow pits among vegetation and in swamps with papyrus.

**Ficalbia (Ficalbia)**

*F. malfeyti* Newst., 1907

NYASALAND, MOCAMBIQUE.

(*See* Mattingly and Hamon, 1955.)

*F. uniformis* Theo., 1904

SOUTHERN RHODESIA : Salisbury. NORTHERN RHODESIA, NYASALAND, MOCAMBIQUE.

Adults are small and dark. Larvae are found in pools with grass and *Pistia*.

**Ficalbia (Mimomyia)**

*F. hispida* Theo., 1910

MOCAMBIQUE, TRANSVAAL.

Adults are medium sized mosquitoes without striking ornamentation. Larvae occur in ditches and pits with vegetation and in pools at the edges of swamps.

*F. hispida palustris* Theo., 1911

SOUTHERN RHODESIA : Umtali.

Larvae probably occur in pools similar to those containing *F. hispida*.

*F. pallida* Edw., 1925

NYASALAND.

Adults resemble *F. hispida*. Larvae have a siphon resembling that of *Mansonia* ; they are found in pools with *Pistia*.

*F. mimomyiaformis* Newst., 1907

SOUTHERN RHODESIA : Salisbury (i.1945, *C. V. M.*), Shamva. NORTHERN RHODESIA, NYASALAND, MOCAMBIQUE, TRANSVAAL.

Adults are small and could be mistaken for a *Uranotaenia*. Larvae resemble *F. hispida* and are recorded from places such as borrow pits with vegetation, grassy swamps and pools.

*F. plumosa* Theo., 1901

SOUTHERN RHODESIA: Salisbury. NORTHERN RHODESIA, MOCAMBIQUE.

Adults are large and distinctive; females bite at night. Larvae have articulated antennae and no sclerotised mentum; they are found in borrow pits and pools with vegetation.

*F. splendens* Theo., 1903

NYASALAND, MOCAMBIBQUE.

Adults are small and have green scales on the mesonotum; they frequent floating water plants. Larvae occur in borrow pits, and in swamps containing *Pistia* and/or other vegetation.

## Mansonia (Coquillettidia)

The generic name *Mansonia* replaces *Taeniorhynchus*. (*See* Stone *in* Lane, 1953; Stone and Knight, 1957.)

*M. aureus* Edw., 1915

SOUTHERN RHODESIA: Bindura (x.1944, *C. V. M.*), TRANSVAAL.

Adults resemble *M. aurites*. Females bite man outside at night and early morning. Larvae are found in forest pools.

*M. aurites* Theo., 1901

NORTHERN RHODESIA.

Adults are large and bright yellow. There was some confusion between this species and *M. fraseri*, which has now been cleared up by Gillett (1949). Females bite man, outside in the daytime. Larvae have tuft B of the eighth abdominal segment single and are inseparable from *M. microannulatus*; they are found in swamps and grassy foul pools; vegetation is a necessity in these places but not always *Pistia*.

*M. cristatus* Theo., 1904

SOUTHERN RHODESIA: Salisbury. NORTHERN RHODESIA, NYASALAND.

Adult has a shiny black thorax, yellow abdomen and legs. Larvae are found in swamps and seepage.

*M. chrysosoma* Edw., 1915

NYASALAND.

Adult resembles *T. aurites*. Larva is unknown (Hopkins, 1952) but is likely to occur in swamps among vegetation.

*M. flavocinctus* Edw., 1936

SOUTHERN RHODESIA: Bindura (x.1944, *C. V. M.*), Salisbury. NORTHERN RHODESIA.

This species may be a geographical form of *M. nigrithorax*. The larva has never been bred (Hopkins, 1952) but is likely to occur among vegetation in swamps.

*M. fuscopennatus* Theo., 1903

Transvaal.

This is a most abundant species. Adults resemble *M. cristatus*. Females bite man and animals outside and indoors in the evening and at night; they have been found infected with *Wuchereria* and may be connected with the transmission of Rift Valley Fever. Larvae have tuft B of the eighth abdominal segment double and possess distinctive antennae; they live in grassy swamps and pools.

*M. maculipennis* Theo., 1911

Southern Rhodesia: Chindamora reserve (ii.1945, *C. V. M.*). Northern Rhodesia, Nyasaland, Transvaal.

Females feed freely on man by day in forest in Uganda. As Gillett (1945) has shown, the real distinguishing feature between larvae of closely allied species of *Mansonia* subg. *Coquillettidia* is found on the antennae, *i.e.* the length of the portion of the pedicellus distal to the tuft. Larvae are found in turbid pools and in water with vegetation.

*M. metallicus* Theo., 1901

Nyasaland, Bechuanaland.

Adults are dark and resemble a *Culex*. Larvae are small, bright green or blue and occur in grassy swamps and in pools with vegetation.

*M. microannulatus* Theo., 1911

Northern Rhodesia.

Adults are almost completely yellow. Females bite man, outside. Larvae are indistinguishable from *M. aurites* and are found in grassy swamps and other waters with vegetation.

**Mansonia (Mansonioides)**

*M. africanus* Theo., 1901

Northern Rhodesia, Nyasaland, Bechuanaland, Mocambique, Transvaal.

Adults are medium sized mosquitoes with broad scales of mixed dark and pale shades on the wings. They have a speckled appearance. Females bite man and animals, day, evening and night, indoors and outside; they have been found infected with *Wuchereria* and have been shown to be laboratory vectors of yellow fever. Eggs occur in masses on the underside of *Pistia* leaves. The larva lives in swamps attached by its characteristic siphon to *Pistia* roots.

*M. uniformis* Theo., 1901

Southern Rhodesia: Salisbury. Northern Rhodesia, Nyasaland, Bechuanaland, Mocambique, Transvaal.

Adults are speckled with broad wing scales. Females bite man indoors and outside by day and by night. The larva differs from that of *M. africanus* by the form of the tuft B of abdominal segment VIII; it lives in swamps attached to the roots of *Pistia* and other water plants by its specially adapted pointed and hooked siphon.

### Theobaldia (Allotheobaldia)

*T. longiareolata* Macq., 1838

Southern Rhodesia: Gatooma (viii.1927, *H. S. L.*). Bechuanaland, Transvaal.

Adults are large and distinctive. The costa is pale scaled anteriorly and the femora and tibiae are speckled. Females bite man and animals indoors at night. Larvae have the subventral tuft at the base of the siphon; they are found in pools, barrels and other artificial containers, the water in which is often foul.

### Theobaldia (Theomyia)

*T. fraseri* Edw., 1914

Southern Rhodesia: Chirinda forest (Edwards, 1941).

This is a large mosquito with no striking ornamentation. The male palps are short and slender. Females bite man by day outside. Larvae have several distinguishing features in mentum, siphon, saddle and pecten; they occur in tree-holes.

### Toxorhynchites

*T. brevipalpis* Theo., 1901

Southern Rhodesia: Salisbury, Shamva. Northern Rhodesia, Nyasaland, Transvaal.

Adults are large blue mosquitoes having the proboscis bent down; they feed on flowers and fruit. Larvae have mouth brushes modified for predacity; they live in leaf axils, tree-holes and artificial containers; the water in these places is often foul.

*T. lutescens* Theo., 1901

Southern Rhodesia: Salisbury. Nyasaland.

Adults are medium sized mosquitoes and predominantly golden. A few additional characters, noted in both male and female are given by van Someren (1946*b*). The larva is unknown (Hopkins, 1952).

### Uranotaenia

*U. alba* Theo., 1901

Southern Rhodesia: Bindura, Salisbury, Shamva. Transvaal.

Wing scales are dark—the specific name is a misnomer. Larvae are found in weedy pools.

*U. balfouri* Theo., 1905

Northern Rhodesia, Mocambique.

Adults are small and dark with blue markings on head and thorax; their feeding habits are unknown. Larvae occur in weedy pools.

*U. bilineata* Theo., 1910

Northern Rhodesia.

Adults have narrow bluish-white lines on scutum and pleurae; feeding habits are unknown. Larvae occur in weedy pools.

*U. bilineata fraseri* Edw., 1912

Southern Rhodesia: Salisbury.

Adult differs from typical *bilineata* in the markings of the hind legs. Larvae are found in grassy pools.

*U. candidipes* Edw., 1912

Southern Rhodesia: Shamva, Sinoia. Transvaal.

*U. fusca* Theo., 1907

Southern Rhodesia: Fungwi reserve, Lundi (vi.1955, *E.T.R.*), Shamva. Northern Rhodesia, Transvaal.

Adults are small and dark with no special ornamentation. Larvae are distinct from all others except *U. nigripes* and are found in rock pools and river puddles.

*U. mashonaensis* Theo., 1901

Southern Rhodesia: Salisbury, Shamva. Transvaal.

Adult has a black spot on the thorax above the wing root. Larvae inhabit grassy swamps, forest pools and rock pools.

*U. montana* Ing. and de M., 1927

Transvaal.

A dark, rather large species with banded abdomen and legs. Larvae live in crab-holes and pools.

*U. nigromaculata* Edw., 1941

Transvaal.

Adult resembles *U. mashonaensis*. Larvae resemble that of *U. mashonaensis* and occur in rock pools.

*U. palmeirimi* de M. and Reb., 1941

Mocambique.

## PART II

### Culicine Mosquitoes Recorded from Southern Rhodesia Listed under Localities Arranged Alphabetically

The species which have been recorded from Southern Rhodesia are listed according to localities which are arranged alphabetically; the map (fig. 1), shows the location of the places mentioned.

Beatrice

Alt., 4500 feet. Long., 30° 50′ E.
Lat., 18° 17′ S. Rainfall, 30–35 inches.

*trifilatus, Culex*, P. B., H. S. L.

Bikita

Alt., 3000–4000 feet. Long., 31° 40′ E.
Lat., 20° 05′ S. Rainfall, 40–45 inches.

*aegypti, Aëdes*, C. V. M.

BINDURA

Alt., 3700 feet. Long., 31° 21′ E.
Lat., 17° 21′ S. Rainfall, 35–40 inches

*alba, Uranotaenia*, F. W. E., W. E. H.
*albocephalus, Aëdes*, P. B., W. E. H.
*alboventralis, Aëdes*, H. S. L.
*annulioris, Culex*, C. V. M., H. S. L., W. E. H.
*aureus, Mansonia*, C. V. M.
*calceatus, Aëdes*, F. W. E., H. S. L.
*duttoni, Culex*, H. S. L., W. E. H.
*ethiopicus, Culex*, F. W. E., H. S. L.
*fatigans, Culex*, W. E. H.
*flavocinctus, Mansonia*, C. V. M.
*fulgens, Aëdes*, P. B., W. E. H.
*hirsutus, Aëdes*, P. B., W. E. H.
*inconspicuosus, Culex*, H. S. L., W. E. H.
*metallicus, Aëdes*, H. S. L.
*nebulosus, Culex*, W. E. H.
*pipiens, Culex*, H. S. L.
*simpsoni, Culex*, H. S. L., W. E. H.
*soleatus, Aëdes*, F. W. E., H. S. L.
*terzii, Culex*, F. W. E., W. E. H.
*tigripes, Culex*, H. S. L.
*univittatus, Culex*, H. S. L.
*vittatus, Aëdes*, P. B., W. E. H.

BIRCHENOUGH BRIDGE

Alt., 1500 feet. Long., 32° 23′ E.
Lat., 19° 58′ S. Rainfall, 15–20 inches.

*aegypti, Aëdes*, C. V. M.

BOMBAS (see FUNGWI RESERVE).

BULAWAYO

Alt., 4400 feet. Long., 28° 37′ E.
Lat., 20° 09′ S. Rainfall, 20–25 inches.

*scatophagoides, Aëdes*, C. V. M.
*simpsoni, Aëdes*, C. V. M., P. F. M.

CHIBI

Alt., 4000 feet. Long., 30° 25′ E.
Lat., 20° 19′ S. Rainfall, 20–25 inches.

*vittatus, Aëdes*, C. V. M., P. F. M.

CHINDAMORA RESERVE

Alt., 4500 feet. Long., 31° 7′ E.
Lat., 17° 30′ S. Rainfall, 30–35 inches.

*maculipennis, Mansonia*, C. V. M.
*nebulosus, Culex*, C. V. M., P. B.

CHIPINGA

Alt., 3725 feet. Long., 32° 37′ E.
Lat., 20° 11′ S. Rainfall, 40–45 inches.

*duttoni, Culex*, C. V. M.
*nebulosus, Culex*, C. V. M., P. B.
*trifilatus, Culex*, C.V.M.

CHIRINDA FOREST (MOUNT SELINDA)

Alt., 3600 feet. Long., 32° 40′ E.
Lat., 20° 25′ S. Rainfall, 45 inches.

*fraseri, Theobaldia*, F. W. E., G. A. K. M.

CLEVELAND DAM

Alt., 4800 feet. Long., 31° 10′ E.
Lat., 17° 50′ S. Rainfall, 35 inches.

*vansomereni, Culex*, H. S. L.

CONCESSION

Alt., 4200 feet. Long., 30° 50′ E.
Lat., 17° 23′ S. Rainfall, 35–40 inches.

*annulioris, Culex*, H. S. L.
*duttoni, Culex*, H. S. L.
*ethiopicus, Culex*, H. S. L.
*horridus, Culex*, H. S. L.
*nebulosus, Culex*, H. S. L.
*salisburiensis, Culex*, H. S. L.
*simpsoni, Culex*, H. S. L.
*tigripes, Culex*, H. S. L.
*univittatus, Culex*, H. S. L.
*vittatus, Aëdes*, H. S. L.

COPPER QUEEN

Alt., 3850 feet. Long., 29° 20′ E.
Lat., 17° 31′ S. Rainfall, 25–30 inches.

*alboventralis, Aëdes*, H. S. L.
*cinereus, Culex*, H. S. L.
*nebulosus, Culex*, H. S. L.
*quasiunivittatus, Aëdes*, H. S. L.

DARWIN

Alt., 4900 feet. Long., 31° 38′ E.
Lat., 16° 45′ S. Rainfall, 30–35 inches.

*aegypti, Aëdes*, H. S. L.
*calceatus, Aëdes*, C. V. M., P. F. M.
*soleatus, Aëdes*, F. W. E., H. S. L.
*vittatus, Aëdes*, C. V. M., P. F. M.

DOMBASHAWA

Alt., 5378 feet. Long., 31° 10′ E.
Lat., 17° 37′ S. Rainfall, 35–40 inches.

*decens, Culex*, H. S. L.
*vittatus, Aëdes*, C. V. M., P. B.

EPWORTH

Alt., 5600 feet. Long., 31° 36′ E.
Lat., 17° 56′ S. Rainfall, 35 inches.

*vansomereni, Culex*, H. S. L.
*vittatus, Aëdes*, H. S. L., P. F. M.

FILABUSI

Alt., 3500 feet. Long., 29° 17′ E.
Lat., 20° 33′ S. Rainfall, 20–25 inches.

*simpsoni, Culex*, H. S. L.

FORT VICTORIA

Alt., 3700 feet. Long., 30° 46′ E.
Lat., 20° 04′ S. Rainfall, 20–25 inches.

*furfurea, Aedomyia*, C. V. M., de M.
*metallicus, Aëdes*, C. V. M., P. F. M.
*nebulosus, Culex*, C. V. M., de M.
*pipiens, Culex*, C. V. M.
*unilineatus, Aëdes*, C. V. M., de M.
*vittatus, Aëdes*, C. V. M., H. S. L., P. F. M.

FUNGWI RESERVE (at BOMBAS)

Alt., 1860 feet. Long., 32° 20′ E.
Lat., 16° 48′ S. Rainfall, 15–20 inches.

*duttoni, Culex*, H. S. L.
*ethiopicus, Culex*, H. S. L.
*fusca, Uranotaenia*, H. S. L.
*simpsoni, Culex*, H. S. L.

GATOOMA

Alt., 3800 feet. Long., 29° 51′ E.
Lat., 18° 20′ S. Rainfall, 30–35 inches.

*annulioris, Culex,* H. S. L.
*decens, Culex,* H. S. L.
*duttoni, Culex,* H. S. L.
*hirsutus, Aëdes,* H. S. L.
*longiareolata, Theobaldia,* H. S. L.
*metallicus, Aëdes,* H. S. L.
*simpsoni, Culex,* H. S. L.
*striatipes, Culex,* H. S. L.
*tigripes, Culex,* H. S. L.
*univittatus, Culex,* H. S. L.
*vansomereni, Culex,* H. S. L.
*vittatus, Aëdes,* H. S. L.

GOROMONZI

Alt., 4800 feet. Long., 31° 32′ E.
Lat., 17° 51′ S. Rainfall, 35–40 inches.

*vittatus, Aëdes,* C. V. M., P. F. M.

GWELO

Alt., 4700 feet. Long., 29° 48′ E.
Lat., 19° 28′ S. Rainfall, 25 inches.

*vittatus, Aëdes,* C. V. M., P. F. M.

HUNYANI

Alt., 4785 feet. Long., 30° 47′ E.
Lat., 17° 53′ S. Rainfall, 30–35 inches.

*horridus, Culex,* H. S. L.

INYAGUI

Alt., 4900 feet. Long., 31° 32′ E.
Lat., 17° 38′ S. Rainfall, 35–40 inches.

*annulioris, Culex,* H. S. L.
*bitaeniorhynchus, Culex,* H. S. L.
*ethiopicus, Culex,* F. W. E., H. S. L.
*simpsoni, Culex,* H. S. L., P. B.

LUNDI

Alt., 1500 feet. Long., 31° 07′ E.
Lat., 20° 58′ S. Rainfall, 25–30 inches.

*fusca, Uranotaenia,* E. T. R.

MARANDELLAS

Alt., 5455 feet. Long., 31° 32′ E.
Lat., 18° 11′ S. Rainfall, 35–40 inches.

*duttoni, Culex,* H. S. L.
*ethiopicus, Culex,* H. S. L.
*striatipes, Culex,* H. S. L.
*univittatus, Culex,* H. S. L.

MARANKA RESERVE

Alt., 4000 feet. Long., 32° 15′ E.
Lat., 19° 15′ S. Rainfall, 25–30 inches.

*vittatus, Aëdes,* C. V. M., P. F. M.

MATOPO HILLS

Alt., 4000–5000 feet. Long., 28° 30′ E.
Lat., 20° 40′ S. Rainfall, 20–25 inches.

*vittatus, Aëdes,* C. V. M., P. F. M.

MAZOE (citrus estate)

Alt., 4100 feet. Long., 30° 59′ E.
Lat., 17° 31′ S. Rainfall, 35–40 inches.

*decens, Culex*, H. S. L.

MSONNEDDI

Alt., 4800 feet. Long., 30° 53′ E.
Lat., 17° 08′ S. Rainfall, 35–40 inches.

*vittatus, Aëdes*, C. V. M., P. F. M.

NDANGA

Alt., 4000 feet. Long., 31° 20′ E.
Lat., 20° 11′ S. Rainfall, 35–40 inches.

*fulgens, Aëdes*, C. V. M.
*furfurea, Aëdomyia*, C. V. M.
*langata, Aëdes*, B. M., P. F. M.
*simpsoni, Aëdes*, C. V. M., P. F. M.
*soleatus, Aëdes*, C. V. M., P. F. M.
*vittatus, Aëdes*, C. V. M., P. F. M.

ODZI

Alt., 3100 feet. Long., 32° 25′ E.
Lat., 18° 55′ S. Rainfall, 30–35 inches.

*metallicus, Aëdes*, C. V. M., P. F. M.

PENHALONGA

Alt., 3750 feet. Long., 32° 40′ E.
Lat., 18° 53′ S. Rainfall, 35–45 inches.

*annulioris, Culex*, H. S. L.
*pipiens, Culex*, H. S. L.
*tigripes, Culex*, H. S. L.
*univittatus, Culex*, H. S. L.

QUE QUE

Alt., 3950 feet. Long., 29° 48′ E.
Lat., 18° 53′ S. Rainfall, 25–30 inches.

*duttoni, Culex*, H. S. L.
*hirsutus, Aëdes*, H. S. L.

RUSAPE

Alt., 4620 feet. Long., 32° 07′ E.
Lat., 18° 31′ S. Rainfall, 30–35 inches.

*annulioris, Culex*, H. S. L.

SALISBURY

Alt., 4800 feet. Long., 31° 01′ E.
Lat., 17° 50′ S. Rainfall, 35 inches.

*aegypti, Aëdes*, H. S. L.
*alba, Uranotaenia*, F. W. E., G. A. K. M.
*albocephalus, Aëdes*, F. W. E., G. A. K. M.
*annulioris, Culex*, C. V. M., F. W. E., G. A. K. M., H. S. L.
*argenteopunctatus, Aëdes*, F. W. E., G. A. K. M.
*argenteopunctatus kingi, Culex*, H. S. L.
*bilineata fraseri, Uranotaenia*, H. S. L.
*bitaeniorhynchus, Culex*, H. S. L., P. B., W. E. H.
*brevipalpis, Toxorhynchites*, C. V. M., F. W. E., G. A. K. M., H. S. L., P. B.
*caballus, Aëdes*, H. S. L.
*cinereus, Culex*, H. S. L., P. B.
*circumluteolus, Aëdes*, H. S. L.
*contiguus, Aëdes*, F. W. E., G. A. K. M., P. F. M.
*cristatus, Mansonia*, H. S. L.
*dalzieli, Aëdes*. H. S. L.
*decens, Culex*, H. S. L., P. B., W. E. H.
*duttoni, Culex*, C. V. M., H. S. L., P. B., W. E. H.

SALISBURY—*cont.*

Alt., 4800 feet.
Lat., 17° 50′ S.
Long., 31° 01′ E.
Rainfall, 35 inches.

*ethiopicus, Culex*, H. S. L.
*fatigans, Culex*, C. V. M., H. S. L., P. B., W. E. H.
*flavocinctus, Mansonia*, C. V. M., de M. and Lav.
*fowleri, Aëdes*, C. V. M., F. W. E., G. A. K. M.
*furfurea, Aedomyia*, C. V. M.
*hirsutus, Aëdes*, H. S. L.
*inconspicuosus, Culex*, F. W. E., G. A. K. M., H. S. L.
*langata, Aëdes*, P. F. M.
*lineatopennis, Aëdes*, C. V. M., F. W. E., G. A. K. M.
? *luteolateralis, Aëdes*, H. S. L.
*lutescens, Toxorhynchites*, F. W. E., G. A. K. M.
*marshalli, Aëdes*, F. W. E., G. A. K. M., H. S. L.
*mashonaensis, Uranotaenia*, F. W. E., G. A. K. M.
*metallicus, Aëdes*, C. V. M., P. F. M.
*mimomyiaformis, Ficalbia*, C. V. M., P. B.
*minutus, Aëdes*, F. W. E., G. A. K. M.
*mixtus, Aëdes*, F. W. E., G. A. K. M.
*nebulosus, Culex*, C. V. M., H. S. L., P. B., W. E. H.
*nebulosus pseudocinereus, Culex*, F. W. E., G. A. K. M.
*ochraceus, Aëdes*, F. W. E., G. A. K. M., H. S. L.
*pipiens, Culex*, H. S. L., P. B., W. E. H.
*plumosa, Ficalbia*, F. W. E., G. A. K. M.
*poicilipes, Culex*, C. V. M., H. S. L., P. B., W. E. H.
*quasiunivittatus, Aëdes*, F. W. E., G. A. K. M., H. S. L.
*quinquevittatus, Eretmapodites*, H. S. L.
*salisburiensis, Culex*, F. W. E., G. A. K. M., H. S. L.
*scatophagoides, Aëdes*, A. C., F. W. E.
*simpsoni, Aëdes*, F. W. E., G. A. K. M., P. B., W. E. H.
*simpsoni, Culex*, C. V. M., H. S. L., P. B., W. E. H.
*terzii, Culex*, F. W. E., G. A. K. M., H. S. L.
*theileri, Culex*, C. V. M., F. W. E., H. S. L.
*tigripes, Culex*, H. S. L., P. B., W. E. H.
*trifilatus, Culex*, C. V. M., H. S. L.
*uniformis, Ficalbia*, H. S. L.
*uniformis, Mansonia*, H. S. L.
*univittatus, Culex*, C. V. M., F. W. E., G. A. K. M., H. S. L., P. B., W. E. H.
*vansomereni, Culex*, C. V. M., de M. and Lav., H. S. L.
*vittatus, Aëdes*, C. V. M., H. S. L.

SHAMVA

Alt., 3200 feet.
Lat., 17° 20′ S.
Long., 31° 37′ E.
Rainfall, 35–40 inches.

*aegypti, Aëdes*, H. S. L.
*alba, Uranotaenia*, H. S. L.
*albocephalus, Aëdes*, H. S. L.
*alboventralis, Aëdes*, H. S. L.
*annulioris, Culex*, H. S. L.
*argenteopunctatus, Aëdes*, H. S. L.
*bilineata, Uranotaenia*, H. S. L.
*bitaeniorhynchus, Culex*, H. S. L.
*brevipalpis, Toxorhynchites*, H. S. L.
*caballus, Aëdes*, H. S. L.
*calceatus, Aëdes*, H. S. L.
*candidipes, Uranotaenia*, H. S. L.
*cinereus, Culex*, H. S. L.
*duttoni, Culex*, H. S. L.
*ethiopicus, Culex*, H. S. L.
*fascipalpis, Aëdes*, H. S. L.
*fatigans, Culex*, H. S. L., P. B.
*fusca, Uranotaenia*, H. S. L.
*hirsutus, Aëdes*, H. S. L.
*horridus, Culex*, H. S. L.
*inconspicuosus, Culex*, H. S. L.
*leesoni, Aëdes*, F. W. E., H. S. L.
*mashonaensis, Uranotaenia*, H. S. L.
*metallicus, Aëdes*, H. S. L.
*mimomyiaformis, Ficalbia*, H. S. L.
*nebulosus, Culex*, H. S. L.
*salisburiensis, Culex*, H. S. L.
*simpsoni, Aëdes*, H. S. L.
*simpsoni, Culex*, H. S. L.
*soleatus, Aëdes*, H. S. L.
*striatipes, Culex*, H. S. L.
*theileri, Culex*, H. S. L.
*tigripes, Culex*, H. S. L.
*trifilatus, Culex*, H. S. L.
*univittatus. Culex*, H. S. L.
*vittatus, Aëdes*, H. S. L.

SINOIA

Alt., 3800 feet. Long., 30° 11′ E.
Lat., 17° 22′ S. Rainfall, 30–35 inches.

*annulioris, Culex*, H. S. L.
*argenteopunctatus, Aëdes*, H. S. L.
*candipes, Uranotaenia*, F. W. E., H. S. L.
*cinereus, Culex*, H. S. L., P. B.
*duttoni, Culex*, H. S. L.
*fatigans, Culex*, H. S. L.
*inconspicuosus, Culex*, H. S. L.
*nebulosus, Culex*, H. S. L.
*pipiens, Culex*, H. S. L.
*salisburiensis, Culex*, H. S. L.
*simpsoni, Aëdes*, C. V. M., P. F. M.
*simpsoni, Culex*, H. S. L.
*tigripes, Culex*, H. S. L.
*trifilatus, Culex*, C. V. M.
*univittatus, Culex*, C. V. M., H. S. L.
*vansomereni, Culex*, H. S. L.

TRIANGLE ESTATE

Alt., 2500 feet. Long., 31° 20′ E.
Lat., 21° 00′ S. Rainfall, 15–25 inches.

*vittatus, Aëdes*, C. V. M., P. F. M.

UMTALI, OLD

Alt., 3670 feet. Long., 32° 31′ E.
Lat., 18° 53′ S. Rainfall, 30–35 inches.

*duttoni, Culex*, H. S. L.

UMTALI

Alt., 3700 feet. Long., 32° 40′ E.
Lat., 18° 58′ S. Rainfall, 30–40 inches.

*aegypti, Aëdes*, H. S. L.
*annulioris, Culex*, H. S. L.
*duttoni, Culex*, H. S. L.
*hispida palustris, Ficalbia*, A. C., F. W. E.
*inconspicuosus, Culex*, H. S. L.
*simpsoni, Aëdes*, C. V. M., H. S. L., P. F. M.
*simpsoni, Culex*, H. S. L.
*theileri, Culex*, H. S. L.
*tigripes, Culex*, C. V. M., H. S. L.
*univittatus, Culex*, H. S. L.
*vittatus, Aëdes*, C. V. M., P. F. M.

UMVUMA

Alt., 4540 feet. Long., 30° 32′ E.
Lat., 19° 16′ S. Rainfall, 25–30 inches.

*duttoni, Culex*, C. V. M.
*salisburiensis, Culex*, C. V. M.

VICTORIA FALLS

Alt., 3000 feet. Long., 25° 51′ E.
Lat., 17° 52′ S. Rainfall, 20 inches.

*aegypti, Aëdes*, C. V. M.
*luteocephalus, Aëdes*, F. W. E., G. A. K. M.
*simpsoni, Aëdes*, C. V. M., P. F. M.
*vittatus, Aëdes*, C. V. M., P. F. M.

ZAKA

Alt., 3000 feet. Long., 31° 24′ E.
Lat., 20° 21′ S. Rainfall, 30–35 inches.

*vittatus, Aëdes*, C. V. M., P. F. M.

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